

# **Diacetyl (Butter Flavor Chemical)**

## **Use in Flavoring Manufacturing Companies**

**Exposure to diacetyl used in flavoring manufacturing companies may cause a serious lung disease called bronchiolitis obliterans.** Workers from two California flavoring manufacturing companies that use diacetyl have been diagnosed with this disease. Damage to the lungs can be permanent, can require a lung transplant, and can lead to death. The main symptoms are a persistent cough and shortness of breath when using extra energy (such as walking fast or up a slight hill) and wheezing when you do not have a cold. The symptoms do not go away in the evenings, on weekends, and on vacations. They can start gradually and get worse over time, or they can suddenly be very severe. Doctors have mistakenly thought that the symptoms were due to asthma, chronic bronchitis, emphysema, pneumonia, or smoking. If you work at a flavoring company that uses diacetyl, see a doctor immediately to make sure that your health is not being affected. Take this information sheet with you. Your company should follow the recommendations on page 2 to reduce exposure to diacetyl and other butter flavoring chemicals.

### **How to know if you are working with diacetyl**

Diacetyl is a yellowish liquid that smells like butter. It is usually mixed with other ingredients to produce butter flavor in a variety of food products. If you think diacetyl is used in your workplace, read labels on containers and ask to see a Material Safety Data Sheet (MSDS). The MSDS must list diacetyl in Section 2 by the Chemical Abstract Service (CAS) number 431-03-8. Under Cal/OSHA's Hazard Communication Standard (Title 8, Section 5194), your employer must tell you if you are using diacetyl, and must train you on the health hazards and how to use it safely.

### **How you are exposed to diacetyl**

Diacetyl enters your body when you breathe vapors, droplets of spray, or dust in the air. It can also enter your body when it touches your skin.

Your risk of health effects depends on the amount of diacetyl that enters your body. The amount of diacetyl in the air and on your skin, and how long you are exposed, determines how much enters your body.

### **How diacetyl may affect your health**

**Lungs.** Breathing diacetyl may damage your lungs and make it difficult for you to breathe. Symptoms include having a dry cough that does not go away for months, being short of breath when you use extra energy such as walking fast or up a slight hill, and wheezing when you do not have a cold. The symptoms can start gradually or become very severe suddenly. They do not go away in the evenings and on weekends when you are not at work. Asthma medicines are not effective. Some workers do not have symptoms. See Medical Tests (page 2). Diacetyl damages the respiratory system of test animals.

**Eyes, nose, and throat.** Diacetyl vapors can irritate your eyes, nose, and throat. Symptoms include stinging or burning of the eyes, and burning and soreness of the nose and throat. The vapors can also cause chemical burns to the eyes, which require medical treatment to heal.

**Skin.** Diacetyl can irritate the skin and cause a rash or dermatitis with dryness, redness, flaking and cracking of the skin.

**Cancer and reproductive effects.** Diacetyl has not been tested to determine whether it can cause cancer, or harm to the reproductive system or developing fetus. However, reducing exposures to protect against lung disease should help to protect against these health effects.

## Medical tests for health effects

Breathing tests (spirometry) that measure how well your lungs are working, and a respiratory symptom questionnaire, are the best ways to detect bronchiolitis obliterans and other serious lung disease. Early detection is critical. You should have a lung function test *before* you begin working in a company that uses diacetyl and on a regular basis while you are working.

## How to reduce exposure to diacetyl

- **Substitution.** Use less hazardous flavoring ingredients whenever feasible. Make sure substitutes are safe.
- **Closed production processes.** Avoid handling open containers of diacetyl and other flavoring ingredients.
- **Ventilation.** Use local exhaust ventilation to maintain air levels of diacetyl as low as possible. A safe exposure level has not been identified.
- **Respiratory protection.** Respirators may be used only if ventilation and other controls are not effective and feasible. Use NIOSH-approved air-purifying respirators with organic vapor cartridges and particulate filters or supplied-air respirators. Employers must comply with the Cal/OSHA Respiratory Protection Standard (Title 8, Section 5144). See [www.dir.ca.gov/title8/5144.html](http://www.dir.ca.gov/title8/5144.html).
- **Skin and eye protection.** Employers must provide protective gloves, goggles and other protective equipment.

## Where to get help

- **HESIS** can answer questions about diacetyl, other workplace hazards, and information in this fact sheet. Call (866) 282-5516.
- **California Division of Occupational Safety and Health (Cal/OSHA)** investigates workers' complaints and makes enforcement inspections. Complainants' identities are kept confidential. Call the nearest office to your workplace or see [www.dir.ca.gov/DOSH/districtoffices.htm](http://www.dir.ca.gov/DOSH/districtoffices.htm).
- **Cal/OSHA Consultation Service** helps employers who want free, non-enforcement help to evaluate the workplace and improve health and safety conditions. Flavoring companies can call: (562) 944-9366.
- **National Institute for Occupational Safety and Health (NIOSH).** See [www.cdc.gov/niosh/topics/flavorings/](http://www.cdc.gov/niosh/topics/flavorings/).
- **Occupational health services** can be found at:
  - University of California (UC) San Francisco: (415) 885-7580
  - UC Davis: (530) 754-7635
  - UC Irvine: (949) 824-8641
  - UC San Diego: (619) 471-9210
  - UCLA: (310) 794-8144

## Regulations that help to protect workers

- **Injury and Illness Prevention Program.** See [www.dir.ca.gov/title8/3203.html](http://www.dir.ca.gov/title8/3203.html).
- **Hazard Communication.** See [www.dir.ca.gov/titl8/5194.html](http://www.dir.ca.gov/titl8/5194.html).